



**IMI** Insulating Materials Incorporated

One Campbell Road  
Schenectady, NY 12306  
518 395-3300

CONTAINS NO CBI

90-890000 445

July 6, 1989

Document Processing Center  
Office of Toxic Substances, TS-790  
United States Environmental Protection  
Agency  
401 M Street, SW  
Washington, DC 20460

Attention: CAIR Reporting Office

**SUBJECT: 40CFR PART 704 TOLUENE DIISOCYANATE**

Dear Sir/Madam:

Attached is a CAIR reporting form EPA #7710-52. This site is required to report as a processor on Toluene Diisocyanate CAS #26471-62-5.

Insulating Materials Incorporated purchased the site from the General Electric Company on March 18, 1988. The data contained in this report is for the reporting period of March 18, 1988 to December 31, 1989.

Sincerely,

A.L. Drake  
Environmental Compliance  
(518) 395-3375

ALD/lw  
Att.

89 JUL 11 AM 10:36  
DOCUMENT PROCESSING  
OFFICE

CONTAINS NO CBI



Form Approved  
OMB No. 2010-0019  
Approval Expires 12-31-89

EPA-OTS



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90-890000 445

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Comprehensive Assessment Information Rule  
REPORTING FORM

When completed, send this form to:

Document Processing Center  
Office of Toxic Substances, TS-790  
U.S. Environmental Protection Agency  
401 M Street, SW  
Washington, DC 20460  
Attention: CAIR Reporting Office

For Agency Use Only:

Date of Receipt: \_\_\_\_\_

Document  
Control Number: \_\_\_\_\_

Docket Number: \_\_\_\_\_

SECTION 1 GENERAL MANUFACTURER, IMPORTER, AND PROCESSOR INFORMATION

PART A GENERAL REPORTING INFORMATION

1.01 This Comprehensive Assessment Information Rule (CAIR) Reporting Form has been completed in response to the Federal Register Notice of..... [1][2] [2][2] [8][8]  
CBI mo. day year

☐ a. If a Chemical Abstracts Service Number (CAS No.) is provided in the Federal Register, list the CAS No. .... [0][2][6][4][7][1]-[6][2]-[5]

b. If a chemical substance CAS No. is not provided in the Federal Register, list either (i) the chemical name, (ii) the mixture name, or (iii) the trade name of the chemical substance as provided in the Federal Register.

(i) Chemical name as listed in the rule ..... \_\_\_\_\_

(ii) Name of mixture as listed in the rule .... \_\_\_\_\_

(iii) Trade name as listed in the rule ..... \_\_\_\_\_

c. If a chemical category is provided in the Federal Register, report the name of the category as listed in the rule, the chemical substance CAS No. you are reporting on which falls under the listed category, and the chemical name of the substance you are reporting on which falls under the listed category.

Name of category as listed in the rule ..... \_\_\_\_\_

CAS No. of chemical substance ..... [ ] [ ] [ ] [ ] [ ] [ ] - [ ] [ ] - [ ]

Name of chemical substance ..... \_\_\_\_\_

1.02 Identify your reporting status under CAIR by circling the appropriate response(s).

CBI Manufacturer ..... 1

☐ Importer ..... 2

Processor ..... (3)

X/P manufacturer reporting for customer who is a processor ..... 4

X/P processor reporting for customer who is a processor ..... 5

☐ Mark (X) this box if you attach a continuation sheet.

1.03 Does the substance you are reporting on have an "x/p" designation associated with it in the above-listed Federal Register Notice?

CBI

☐ Yes ..... [☒] Go to question 1.04

☐ No ..... [☐] Go to question 1.05

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice? Circle the appropriate response.

CBI

☐ Yes ..... 1

☐ No ..... (2)

b. Check the appropriate box below:

☐ You have chosen to notify your customers of their reporting obligations  
Provide the trade name(s) ....

☐ You have chosen to report for your customers

☐ You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI

☐ Trade name ..... Mondur TD-80

Is the trade name product a mixture? Circle the appropriate response.

Yes ..... 1

No ..... (2)

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI

☐ "I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

Allan L. Drake  
NAME

*Allan L. Drake*  
SIGNATURE

7/5/89  
DATE SIGNED

Environmental Compliance  
TITLE

( 518 ) 395 - 3375  
TELEPHONE NO.

☐ Mark (X) this box if you attach a continuation sheet.

- 1.07 Exemptions From Reporting -- If you have provided EPA or another Federal agency with the required information on a CAIR Reporting Form for the listed substance within the past 3 years, and this information is current, accurate, and complete for the time period specified in the rule, then sign the certification below. You CBI ☐ are required to complete section 1 of this CAIR form and provide any information now required but not previously submitted. Provide a copy of any previous submissions along with your Section 1 submission.

"I hereby certify that, to the best of my knowledge and belief, all required information which I have not included in this CAIR Reporting Form has been submitted to EPA within the past 3 years and is current, accurate, and complete for the time period specified in the rule."

_____ NAME	_____ SIGNATURE	_____ DATE SIGNED
_____ TITLE	(_____) _____ TELEPHONE NO.	_____ DATE OF PREVIOUS SUBMISSION

- 1.08 CBI Certification -- If you have asserted any CBI claims in this report you must certify that the following statements truthfully and accurately apply to all of those confidentiality claims which you have asserted.

CBI ☐ "My company has taken measures to protect the confidentiality of the information, and it will continue to take these measures; the information is not, and has not been, reasonably ascertainable by other persons (other than government bodies) by using legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding) without my company's consent; the information is not publicly available elsewhere; and disclosure of the information would cause substantial harm to my company's competitive position."

_____ NAME	_____ SIGNATURE	_____ DATE SIGNED
_____ TITLE	(_____) _____ TELEPHONE NO.	

☐ Mark (X) this box if you attach a continuation sheet.

PART B CORPORATE DATA

1.09 Facility Identification

CBI Name [I] [N] [S] [U] [L] [A] [T] [I] [N] [G] [ ] [M] [A] [T] [E] [R] [I] [A] [L] [S] [ ] [I] [N] [C] [ ] [ ]  
[ ] Address [I] [ ] [C] [A] [M] [P] [B] [E] [L] [L] [ ] [R] [O] [A] [D] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]  
Street  
[S] [C] [H] [E] [N] [E] [C] [T] [A] [D] [Y] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]  
City  
[N] [Y] [ ] [1] [2] [3] [0] [6] -- [0] [0] [0] [0]  
State Zip  
Dun & Bradstreet Number ..... [1] [8] - [6] [1] [3] - [2] [2] [8] [8]  
EPA ID Number ..... NYD. [0] [5] [2] [9] [8] [7] [0] [9] [6]  
Employer ID Number ..... Only have Federal ID No. .... [1] [4] [1] [7] [0] [0] [7] [6] 3  
Primary Standard Industrial Classification (SIC) Code ..... [2] [8] [2] [1]  
Other SIC Code ..... [ ] [ ] [ ] [ ]  
Other SIC Code ..... [ ] [ ] [ ] [ ]

1.10 Company Headquarters Identification

CBI Name [I] [N] [S] [U] [L] [A] [T] [I] [N] [G] [ ] [M] [A] [T] [E] [R] [I] [A] [L] [S] [ ] [I] [N] [C] [ ] [ ]  
[ ] Address [I] [ ] [C] [A] [M] [P] [B] [E] [L] [L] [ ] [R] [O] [A] [D] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]  
Street  
[S] [C] [H] [E] [N] [E] [C] [T] [A] [D] [Y] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]  
City  
[N] [Y] [ ] [1] [2] [3] [0] [6] -- [0] [0] [0] [0]  
State Zip  
Dun & Bradstreet Number ..... [1] [8] - [6] [1] [3] - [2] [2] [8] [8]  
Employer ID Number ..... Only have Federal ID No. .... [1] [4] [1] [7] [0] [0] [7] [6] 3

[ ] Mark (X) this box if you attach a continuation sheet.

### 1.11 Parent Company Identification

**CBI**    Name    [ I ] [ N ] [ S ] [ U ] [ L ] [ A ] [ T ] [ I ] [ N ] [ G ] [ ] [ M ] [ A ] [ T ] [ E ] [ R ] [ I ] [ A ] [ L ] [ S ] [ ] [ I ] [ N ] [ C ] [ ] [ ]

[illegible]

[S][C][H][E][N][E][C][T][A][D][Y] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]  
City

[ N ] [ Y ]      [ 1 ] [ 2 ] [ 3 ] [ 0 ] [ 6 ]--[ 0 ] [ 0 ] [ 0 ] [ 0 ]  
State                  Zip

Dun & Bradstreet Number .....[1][8]-[6][1][3]-[2][2][8][8]

## 1.12 Technical Contact

CBI    Name   [ A ] [ L ] [ L ] [ A ] [ N ] [   ] [ L ] [   ] [ D ] [ R ] [ A ] [ K ] [ E ] [   ] [   ] [   ] [   ] [   ] [   ] [   ] [   ] [   ] [   ]

[ ] Title [E][N][V][I][R][O][N][M][E][N][T][A][L][ ] [C][O][M][P][L][I][A][N][C][E][ ] [ ]

**Address** [1][ ][C][A][M][P][B][E][L][L][ ][R][O][A][D][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]  
Street

[S][C][H][E][N][E][C][T]A[D]Y[\_][\_][\_][\_][\_][\_][\_][\_][\_][\_][\_][\_][\_][\_][\_]  
City

N Y  
State      [1][2][3][0][6]--[0][0][0][0]  
Zip

Telephone Number .....[5][1][8]-[3][9][5]-[3][3][7][5]

1.13 This reporting year is from ..... [0]3 [8]8 to [1]2 [8]8  
Mo. Year Mo. Year

Data in this report is based on 3/18/89 purchase date by Insulating Materials, Inc.

☐ Mark (X) this box if you attach a continuation sheet.

CBI    Name of Seller   [G][E][N][E][R][A][L] [][E][L][E][C][T][R][I][C] [][C][O] []  
[]    Mailing Address   [2][6][0] [][H][U][D][S][O][N] [][R][I][V][E][R] [][R][O][A][D] []  
  Street

[W][A][T][E][R][F][O][R][D] [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]  
City

[illegible]

Employer ID Number .....[1][4][0][6][8][9][3][4]

Date of Sale ..... 03 18 88  
Mo. Day Year

Contact Person [G][E][N][E][ ][R][ ][B][R][O][W][N][I][N][G][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Telephone Number .....[5][1][8]-[2][3][3]-[3][7][6][3]

CBI    Name of Buyer   [N] [A] \_\_\_\_\_  
[ ]   Mailing Address   ([ ) \_\_\_\_\_  

Street

[illegible]

--  
State                      Zip

Employer ID Number .....[ ][ ][ ][ ][ ][ ][ ][ ][ ]

Date of Purchase ..... ( ) ( ) ( ) ( )  
Mo. Day Year

Contact Person [ ]

Telephone Number .....[ ][ ]-[ ][ ]-[ ][ ][ ][ ]

8

1.16 For each classification listed below, state the quantity of the listed substance that was manufactured, imported, or processed at your facility during the reporting year.

CBI

☐

Classification

Quantity (kg/yr)

Manufactured ..... NA

Imported ..... NA

Processed (include quantity repackaged) ..... 62,330

Of that quantity manufactured or imported, report that quantity:

In storage at the beginning of the reporting year ..... NA

For on-site use or processing ..... NA

For direct commercial distribution (including export) ..... NA

In storage at the end of the reporting year ..... NA

Of that quantity processed, report that quantity: \*

In storage at the beginning of the reporting year ..... 13208

Processed as a reactant (chemical producer) ..... 62330

Processed as a formulation component (mixture producer) ..... NA

Processed as an article component (article producer) ..... NA

Repackaged (including export) ..... NA

In storage at the end of the reporting year ..... 14720

\*Based on 3/18/89 purchase date

☐ Mark (X) this box if you attach a continuation sheet.

1.17 Mixture -- If the listed substance on which you are required to report is a mixture or a component of a mixture, provide the following information for each component chemical. (If the mixture composition is variable, report an average percentage of each component chemical for all formulations.)

[ ]

☐ Mark (X) this box if you attach a continuation sheet.

2.04 State the quantity of the listed substance that your facility manufactured, imported, or processed during the 3 corporate fiscal years preceding the reporting year in descending order.

CBI Have only owned site from 3/18/89 to 12/31/89; cannot report data.

☐ Year ending ..... 

<table border="1"><tr><td>N</td><td>A</td></tr></table>	N	A	<table border="1"><tr><td>N</td><td>A</td></tr></table>	N	A
N	A				
N	A				
Mo.	Year				

Quantity manufactured ..... 

NA	kg
----	----

Quantity imported ..... 

NA	kg
----	----

Quantity processed ..... 

NA	kg
----	----

Year ending ..... 

<table border="1"><tr><td>N</td><td>A</td></tr></table>	N	A	<table border="1"><tr><td>N</td><td>A</td></tr></table>	N	A
N	A				
N	A				
Mo.	Year				

Quantity manufactured ..... 

NA	kg
----	----

Quantity imported ..... 

NA	kg
----	----

Quantity processed ..... 

NA	kg
----	----

Year ending ..... 

<table border="1"><tr><td>N</td><td>A</td></tr></table>	N	A	<table border="1"><tr><td>N</td><td>A</td></tr></table>	N	A
N	A				
N	A				
Mo.	Year				

Quantity manufactured ..... 

NA	kg
----	----

Quantity imported ..... 

NA	kg
----	----

Quantity processed ..... 

NA	kg
----	----

2.05 Specify the manner in which you manufactured the listed substance. Circle all appropriate process types.

CBI

☐ Continuous process ..... 1

Semicontinuous process ..... 2

Batch process ..... 3

☐ Mark (X) this box if you attach a continuation sheet.

2.06 Specify the manner in which you processed the listed substance. Circle all appropriate process types.

- ☐ Continuous process ..... 1
- ☐ Semicontinuous process ..... 2
- ☐ Batch process ..... (3)

2.07 State your facility's name-plate capacity for manufacturing or processing the listed substance. (If you are a batch manufacturer or batch processor, do not answer this question.)

☐ Manufacturing capacity ..... NA kg/yr

☐ Processing capacity ..... NA kg/yr

2.08 If you intend to increase or decrease the quantity of the listed substance manufactured, imported, or processed at any time after your current corporate fiscal year, estimate the increase or decrease based upon the reporting year's production volume.

☐

	Manufacturing Quantity (kg)	Importing Quantity (kg)	Processing Quantity (kg)
Amount of increase	NA	NA	NA
Amount of decrease	NA	NA	37,800

☐ Mark (X) this box if you attach a continuation sheet.

- 2.09 For the three largest volume manufacturing or processing process types involving the listed substance, specify the number of days you manufactured or processed the listed substance during the reporting year. Also specify the average number of hours per day each process type was operated. (If only one or two operations are involved, list those.)

CBI

☐

	<u>Days/Year</u>	<u>Average Hours/Day</u>
Process Type #1 (The process type involving the largest quantity of the listed substance.)		
Manufactured .....	<u>NA</u>	<u>NA</u>
Processed .....	<u>8</u>	<u>12</u>
Process Type #2 (The process type involving the 2nd largest quantity of the listed substance.)		
Manufactured .....	<u>NA</u>	<u>NA</u>
Processed .....	<u>NA</u>	<u>NA</u>
Process Type #3 (The process type involving the 3rd largest quantity of the listed substance.)		
Manufactured .....	<u>NA</u>	<u>NA</u>
Processed .....	<u>NA</u>	<u>NA</u>

- 2.10 State the maximum daily inventory and average monthly inventory of the listed substance that was stored on-site during the reporting year in the form of a bulk chemical.

CBI

☐

Maximum daily inventory .....	_____	kg
Average monthly inventory .....	_____	kg

☐ Mark (X) this box if you attach a continuation sheet.

2.11 Related Product Types -- List any byproducts, coproducts, or impurities present with the listed substance in concentrations greater than 0.1 percent as it is manufactured, imported, or processed. The source of byproducts, coproducts, or impurities means the source from which the byproducts, coproducts, or impurities are made or introduced into the product (e.g., carryover from raw material, reaction product, etc.).

CBI

☐

<u>CAS No.</u>	<u>Chemical Name</u>	<u>Byproduct, Coproduct or Impurity<sup>1</sup></u>	<u>Concentration (%) (specify <math>\pm</math> % precision)</u>	<u>Source of By-products, Coproducts, or Impurities</u>
NA				

<sup>1</sup>Use the following codes to designate byproduct, coproduct, or impurity:

B = Byproduct

C = Coproduct

I = Impurity

☐ Mark (X) this box if you attach a continuation sheet.

- 2.12 Existing Product Types -- List all existing product types which you manufactured, imported, or processed using the listed substance during the reporting year. List the quantity of listed substance you use for each product type as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a.	b.	c.	d.
Product Types <sup>1</sup>	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users <sup>2</sup>
B	100	100	I*
* Totally consumed on site. Respondent's customers do not see the TSCA material except as an impurity.			

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

- 2.13 Expected Product Types -- Identify all product types which you expect to manufacture, import, or process using the listed substance at any time after your current corporate fiscal year. For each use, specify the quantity you expect to manufacture, import, or process for each use as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a.	b.	c.	d.
Product Types <sup>1</sup>	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users <sup>2</sup>
B	100	100	I*
* Totally consumed on site. Respondent's customers do not see the TSCA material except as an impurity.			

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.14 Final Product -- Complete the following table for each type of final product manufactured, imported, or processed at your facility that contains the listed substance other than as an impurity.

☐

a.	b.	c.	d.
Product Type <sup>1</sup>	Final Product's Physical Form <sup>2</sup>	Average % Composition of Listed Substance in Final Product	Type of End-Users <sup>3</sup>
NA			
Only present in final product to customers as very low level impurity.			

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the final product's physical form:

A = Gas	F2 = Crystalline solid
B = Liquid	F3 = Granules
C = Aqueous solution	F4 = Other solid
D = Paste	G = Gel
E = Slurry	H = Other (specify) _____
F1 = Powder	

<sup>3</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.15 Circle all applicable modes of transportation used to deliver bulk shipments of the  
CBI listed substance to off-site customers.

- ☐ Truck ..... 1
- Railcar ..... 2
- Barge, Vessel ..... 3
- Pipeline ..... 4
- Plane ..... 5
- Other (specify) NA ..... 6

2.16 Customer Use -- Estimate the quantity of the listed substance used by your customers  
CBI or prepared by your customers during the reporting year for use under each category  
of end use listed (i-iv).

☐

Category of End Use

i. Industrial Products

Chemical or mixture ..... NA kg/yr

Article ..... NA kg/yr

ii. Commercial Products

Chemical or mixture ..... NA kg/yr

Article ..... NA kg/yr

iii. Consumer Products

Chemical or mixture ..... NA kg/yr

Article ..... NA kg/yr

iv. Other

Distribution (excluding export) ..... NA kg/yr

Export ..... NA kg/yr

Quantity of substance consumed as reactant ..... NA kg/yr

Unknown customer uses ..... NA kg/yr

☐ Mark (X) this box if you attach a continuation sheet.

### SECTION 3 PROCESSOR RAW MATERIAL IDENTIFICATION

#### PART A GENERAL DATA

- 3.01 Specify the quantity purchased and the average price paid for the listed substance for each major source of supply listed. Product trades are treated as purchases.  
CBI The average price is the market value of the product that was traded for the listed substance.

☐

<u>Source of Supply</u>	<u>Quantity (kg)</u>	<u>Average Price (\$/kg)</u>
The listed substance was manufactured on-site.	NA	NA
The listed substance was transferred from a different company site.	NA	NA
The listed substance was purchased directly from a manufacturer or importer.	61525	1.135
The listed substance was purchased from a distributor or repackager.	NA	NA
The listed substance was purchased from a mixture producer.	NA	NA

- 3.02 Circle all applicable modes of transportation used to deliver the listed substance to your facility.

☐

- Truck ..... ①
- Railcar ..... 2
- Barge, Vessel ..... 3
- Pipeline ..... 4
- Plane ..... 5
- Other (specify) \_\_\_\_\_ 6

☐ Mark (X) this box if you attach a continuation sheet.

3.03 a. Circle all applicable containers used to transport the listed substance to your facility.

CBI

☐

Bags ..... 1  
Boxes ..... 2  
Free standing tank cylinders ..... 3  
Tank rail cars ..... 4  
Hopper cars ..... 5  
Tank trucks ..... 6  
Hopper trucks ..... 7  
Drums ..... 8  
Pipeline ..... 9  
Other (specify) \_\_\_\_\_ 10

b. If the listed substance is transported in pressurized tank cylinders, tank rail cars, or tank trucks, state the pressure of the tanks.

Tank cylinders ..... mmHg  
Tank rail cars ..... mmHg  
Tank trucks ..... AMBIENT mmHg

☐ Mark (X) this box if you attach a continuation sheet.

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PART B RAW MATERIAL IN THE FORM OF A MIXTURE

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3.04 If you obtain the listed substance in the form of a mixture, list the trade name(s) of the mixture, the name of its supplier(s) or manufacturer(s), an estimate of the average percent composition by weight of the listed substance in the mixture, and the amount of mixture processed during the reporting year.

☐

<u>Trade Name</u>	<u>Supplier or Manufacturer</u>	<u>Average % Composition by Weight (specify <math>\pm</math> % precision)</u>	<u>Amount Processed (kg/yr)</u>
<u>NA</u>			

---

☐ Mark (X) this box if you attach a continuation sheet.

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PART C RAW MATERIAL VOLUME

---

3.05 State the quantity of the listed substance used as a raw material during the reporting year in the form of a class I chemical, class II chemical, or polymer, and the percent composition, by weight, of the listed substance.

☐

	Quantity Used (kg/yr)	% Composition by Weight of Listed Sub- stance in Raw Material (specify $\pm$ % precision)
Class I chemical	NA	NA
Class II chemical	NA	NA
Polymer	62330	99.8% $\pm$ 0.2

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☐ Mark (X) this box if you attach a continuation sheet.

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## SECTION 4 PHYSICAL/CHEMICAL PROPERTIES

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### General Instructions:

If you are reporting on a mixture as defined in the glossary, reply to questions in Section 4 that are inappropriate to mixtures by stating "NA -- mixture."

For questions 4.06-4.15, if you possess any hazard warning statement, label, MSDS, or other notice that addresses the information requested, you may submit a copy or reasonable facsimile in lieu of answering those questions which it addresses.

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### PART A PHYSICAL/CHEMICAL DATA SUMMARY

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- 4.01 Specify the percent purity for the three major<sup>1</sup> technical grade(s) of the listed substance as it is manufactured, imported, or processed. Measure the purity of the substance in the final product form for manufacturing activities, at the time you import the substance, or at the point you begin to process the substance.

CBI

☐

	<u>Manufacture</u>	<u>Import</u>	<u>Process</u>
Technical grade #1	<u>NA</u> % purity	<u>NA</u> % purity	<u>99.7</u> % purity
Technical grade #2	<u>          </u> % purity	<u>          </u> % purity	<u>          </u> % purity
Technical grade #3	<u>          </u> % purity	<u>          </u> % purity	<u>          </u> % purity

-----  
<sup>1</sup>Major = Greatest quantity of listed substance manufactured, imported or processed.

- 4.02 Submit your most recently updated Material Safety Data Sheet (MSDS) for the listed substance, and for every formulation containing the listed substance. If you possess an MSDS that you developed and an MSDS developed by a different source, submit your version. Indicate whether at least one MSDS has been submitted by circling the appropriate response.

Yes ..... (1)

No ..... 2

Indicate whether the MSDS was developed by your company or by a different source.

Your company ..... 1

Another source ..... (2)

---

☒ Mark (X) this box if you attach a continuation sheet.

---

4.03 Submit a copy or reasonable facsimile of any hazard information (other than an MSDS) that is provided to your customers/users regarding the listed substance or any formulation containing the listed substance. Indicate whether this information has been submitted by circling the appropriate response.

Yes ..... 1

No ..... (2)

4.04 For each activity that uses the listed substance, circle all the applicable number(s) corresponding to each physical state of the listed substance during the activity listed. Physical states for importing and processing activities are determined at the time you import or begin to process the listed substance. Physical states for manufacturing, storage, disposal and transport activities are determined using the final state of the product.

CBI

[ ]

Activity	Physical State				
	Solid	Slurry	Liquid	Liquified Gas	Gas
Manufacture	1	2	3	4	5
Import	1	2	3	4	5
Process	1	2	(3)	4	5
Store	1	2	(3)	4	5
Dispose	1	2	(3)	4	5
Transport	1	2	3	4	5

[ ] Mark (X) this box if you attach a continuation sheet.

- 4.05 Particle Size -- If the listed substance exists in particulate form during any of the following activities, indicate for each applicable physical state the size and the percentage distribution of the listed substance by activity. Do not include particles  $\geq 10$  microns in diameter. Measure the physical state and particle sizes for importing and processing activities at the time you import or begin to process the listed substance. Measure the physical state and particle sizes for manufacturing storage, disposal and transport activities using the final state of the product.

CBI

☐

Physical State		Manufacture	Import	Process	Store	Dispose	Transport
Dust	<1 micron	NA	NA	NA	NA	NA	NA
	1 to <5 microns	NA	NA	NA	NA	NA	NA
	5 to <10 microns	NA	NA	NA	NA	NA	NA
Powder	<1 micron	NA	NA	NA	NA	NA	NA
	1 to <5 microns	NA	NA	NA	NA	NA	NA
	5 to <10 microns	NA	NA	NA	NA	NA	NA
Fiber	<1 micron	NA	NA	NA	NA	NA	NA
	1 to <5 microns	NA	NA	NA	NA	NA	NA
	5 to <10 microns	NA	NA	NA	NA	NA	NA
Aerosol	<1 micron	NA	NA	NA	NA	NA	NA
	1 to <5 microns	NA	NA	NA	NA	NA	NA
	5 to <10 microns	NA	NA	NA	NA	NA	NA

☐ Mark (X) this box if you attach a continuation sheet.

## SECTION 5 ENVIRONMENTAL FATE

### PART A RATE CONSTANTS AND TRANSFORMATION PRODUCTS

5.01 Indicate the rate constants for the following transformation processes.

a. Photolysis:

Absorption spectrum coefficient (peak) .... 871 (1/M cm) at 284 nm

Reaction quantum yield,  $\phi$  ..... NO INFORMATION at \_\_\_\_\_ nm

Direct photolysis rate constant,  $k_p$ , at ...  $<1.2 \times 10^{-3}$  1/hr when  $\text{NO}_2$  ~~XXXXXX~~  
photolysis rate is 0.37/hr<sup>(2)</sup>

b. Oxidation constants at 25°C:

For  $^1\text{O}_2$  (singlet oxygen),  $k_{ox}$  ..... No Information 1/M hr

For  $\text{RO}_2$  (peroxy radical),  $k_{ox}$  ..... No Information 1/M hr

c. Five-day biochemical oxygen demand,  $\text{BOD}_5$  ... Not applicable due to reaction with water mg/l

d. Biotransformation rate constant:

For bacterial transformation in water,  $k_b$ ... No oxygen consumed 1/hr

Specify culture ..... in modified MITI test <sup>(3)</sup>

e. Hydrolysis rate constants:

For base-promoted process,  $k_B$  ..... No Information 1/M hr

For acid-promoted process,  $k_A$  ..... No Information 1/M hr

For neutral process,  $k_N$  ..... No Information 1/hr

f. Chemical reduction rate (specify conditions) Not Expected

g. Other (such as spontaneous degradation) ... Polyurea formation under hydrolytic conditions <sup>(4)</sup>

☐ Mark (X) this box if you attach a continuation sheet.

PART B PARTITION COEFFICIENTS

5.02 a. Specify the half-life of the listed substance in the following media.

<u>Media</u>	<u>Half-life (specify units)</u>
Groundwater	<< 1 day in water solution (4)
Atmosphere	26 hour (2)
Surface water	<< 1 day in water solution (4)
Soil	< 1 day (4)

b. Identify the listed substance's known transformation products that have a half-life greater than 24 hours.

<u>CAS No.</u>	<u>Name</u>	<u>Half-life (specify units)</u>	<u>Media</u>
Not Found	Polyurea	> 1 year	in water and soil (4)
95-80-7	2,4-Toluene diamine	< 1 day	in biological waste-water treatment
823-40-5	2,6-Toluene diamine	< 1 day	in plant (4)
5206-52-0	Urea, N,N'-bis(3-isocyanato-4-methylphenyl)	Unknown half-life	in (5,6)

5.03 Specify the octanol-water partition coefficient,  $K_{ow}$  ... reacts with both at 25°C  
 Method of calculation or determination ..... octanol and water

5.04 Specify the soil-water partition coefficient,  $K_d$  ..... reacts with water at 25°C  
 Soil type .....

5.05 Specify the organic carbon-water partition coefficient,  $K_{oc}$  ..... reacts with water at 25°C

5.06 Specify the Henry's Law Constant,  $H$  ..... reacts with water atm-m<sup>3</sup>/mole

☐ Mark (X) this box if you attach a continuation sheet.

- 5.07 List the bioconcentration factor (BCF) of the listed substance, the species for which it was determined, and the type of test used in deriving the BCF.

<u>Bioconcentration Factor</u>	<u>Species</u>	<u>Test</u> <sup>1</sup>
<u>None Detected</u>	<u>Moina macrocopa Straus</u>	<u>Not Defined (4)</u>
<u>None Detected</u>	<u>Cyprinus carpio</u>	<u>Not Defined (4)</u>
<u> </u>	<u> </u>	<u> </u>

<sup>1</sup>Use the following codes to designate the type of test:

F = Flowthrough  
S = Static

- (1) Phillips and Nachod, eds., Organic Electronic Spectral Data, Vol. IV, pg 200.
- (2) K.H. Becker, V. Bastian and Th. Klein, The reactions of toluenediisocyanate, toluenediamine and methylenedianiline under simulated atmospheric conditions, J. Photochem. and Photobiol., A: Chemistry, 45 (1988) 195-205.
- (3) N. Caspers, B. Hamburger, R. Kanne and Waklebert, Ecotoxicity of TDI, MDI, TDA, and MDA, Report to the International Isocyanate Institute, E-CE-41, 1986. Quoted in D.S. Gilbert, Fate of TDI and MDI in Air, Soil and Water, Polyurethanes World Congress 1987, Proceedings of the SPI/FSK.
- (4) F.K. Brochhagen and B.M. Grieveson, Environmental aspects of isocyanates in water and soil, Cellular Polymers, 3 (1984) 11-17.
- (5) K. Marcali, Microdetermination of toluenediisocyanate in atmosphere, Anal. Chem. 29 (1957) 552-558.
- (6) G.A. Campbell, T.J. Dearlove and W.C. Meluch, Di(isocyanatotolyl)urea, U.S. Patent 3,906,019 (1975), Chem. Abs. 84:5645h.

☐ Mark (X) this box if you attach a continuation sheet.

6.04 For each market listed below, state the quantity sold and the total sales value of  
CBI the listed substance sold or transferred in bulk during the reporting year.

☐

<u>Market</u>	<u>Quantity Sold or Transferred (kg/yr)</u>	<u>Total Sales Value (\$/yr)</u>
Retail sales	_____	_____
Distribution -- Wholesalers	_____	_____
Distribution -- Retailers	_____	_____
Intra-company transfer	_____	_____
Repackagers	_____	_____
Mixture producers	_____	_____
Article producers	_____	_____
Other chemical manufacturers or processors	_____	_____
Exporters	_____	_____
Other (specify)	_____	_____
_____	_____	_____

6.05 Substitutes -- List all known commercially feasible substitutes that you know exist  
CBI for the listed substance and state the cost of each substitute. A commercially  
feasible substitute is one which is economically and technologically feasible to use  
in your current operation, and which results in a final product with comparable  
performance in its end uses.

☐

<u>Substitute</u>	<u>Cost (\$/kg)</u>
None Known	NA
_____	_____
_____	_____
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

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SECTION 7 MANUFACTURING AND PROCESSING INFORMATION

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General Instructions:

For questions 7.04-7.06, provide a separate response for each process block flow diagram provided in questions 7.01, 7.02, and 7.03. Identify the process type from which the information is extracted.

---

PART A MANUFACTURING AND PROCESSING PROCESS TYPE DESCRIPTION

---

7.01 In accordance with the instructions, provide a process block flow diagram showing the major (greatest volume) process type involving the listed substance.

CBI

☐ Process type ..... Toluene diisocyanate, Trimethylol propane adduct, Phenol blocked, polymer solution

---

☒ Mark (X) this box if you attach a continuation sheet.

---

7.03 In accordance with the instructions, provide a process block flow diagram showing all process emission streams and emission points that contain the listed substance and which, if combined, would total at least 90 percent of all facility emissions if not treated before emission into the environment. If all such emissions are released from one process type, provide a process block flow diagram using the instructions for question 7.01. If all such emissions are released from more than one process type, provide a process block flow diagram showing each process type as a separate block.

CBI

☐ Process type ..... Toluene diisocyanate, Trimethylol propane adduct, phenol blocked, polymer solution

☒ Mark (X) this box if you attach a continuation sheet.

7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Toluene diisocyanate, Trimethylol propane adduct, Phenol blocked, polymer solution

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.1</u>	<u>Toluene Diisocyanate Tank</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Carbon Steel</u>
<u>7.2</u>	<u>Air Eliminator</u>	<u>Ambient</u>	<u>1550 mm</u>	<u>Carbon Steel</u>
<u>7.3</u>	<u>Toluene Diisocyanate Meter</u>	<u>Ambient</u>	<u>1550 mm</u>	<u>Carbon Steel</u>
<u>7.4</u>	<u>Batch Reactor</u>	<u>20-90</u>	<u>Atmospheric</u>	<u>Stainless Steel</u>
<u>7.5</u>	<u>Raw Material Meters</u>	<u>20-70</u>	<u>1550 mm</u>	<u>Carbon Steel</u>
<u>7.6</u>	<u>Vent Line Condensor</u>	<u>20-90</u>	<u>Atmospheric</u>	<u>Carbon and Stainless Steel</u>
<u>7.7</u>	<u>Venturi Water Scrubber</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Stainless Steel</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

☐ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

<u>Process Stream ID Code</u>	<u>Process Stream Description</u>	<u>Physical State</u> <sup>1</sup>	<u>Stream Flow (kg/yr)</u>
7A	Naphtha 100	OL	88752
7B	Dibasic Esters	OL	18941
7C	Toluene Diisocyanate	OL	62330
7D	Trimethylol Propane	OL	16153
7E	Phenol	OL	79967
7F	Dibutyl Tin Dilaurate	OL	84
7G	Cresylic Acid High Boil	OL	8385
7H	Cresylic Acid	OL	1758

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
GU = Gas (uncondensable at ambient temperature and pressure)  
SO = Solid  
SY = Sludge or slurry  
AL = Aqueous liquid  
OL = Organic liquid  
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... Toluene diisocyanate, trimethylol propane adduct, phenol blocked, polymer solution

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7A	Naphtha 100	100% AW	NA	NA
7B	Dibasic Esters	99.4% AW	Hydrogen Cyanide	15ppm AW
			Methyl Alcohol	0.6% AW
7C	Toluene Diisocyanate	99.7% AW	Chlorides	0.05% AW

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 (continued)

<sup>1</sup>For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column b. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

<u>Additive Package Number</u>	<u>Components of Additive Package</u>	<u>Concentrations (% or ppm)</u>
<u>1</u>	<u>NA</u>	<u>NA</u>
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		

<sup>2</sup>Use the following codes to designate how the concentration was determined:

A = Analytical result  
E = Engineering judgement/calculation

<sup>3</sup>Use the following codes to designate how the concentration was measured:

V = Volume  
W = Weight

☐ Mark (X) this box if you attach a continuation sheet.

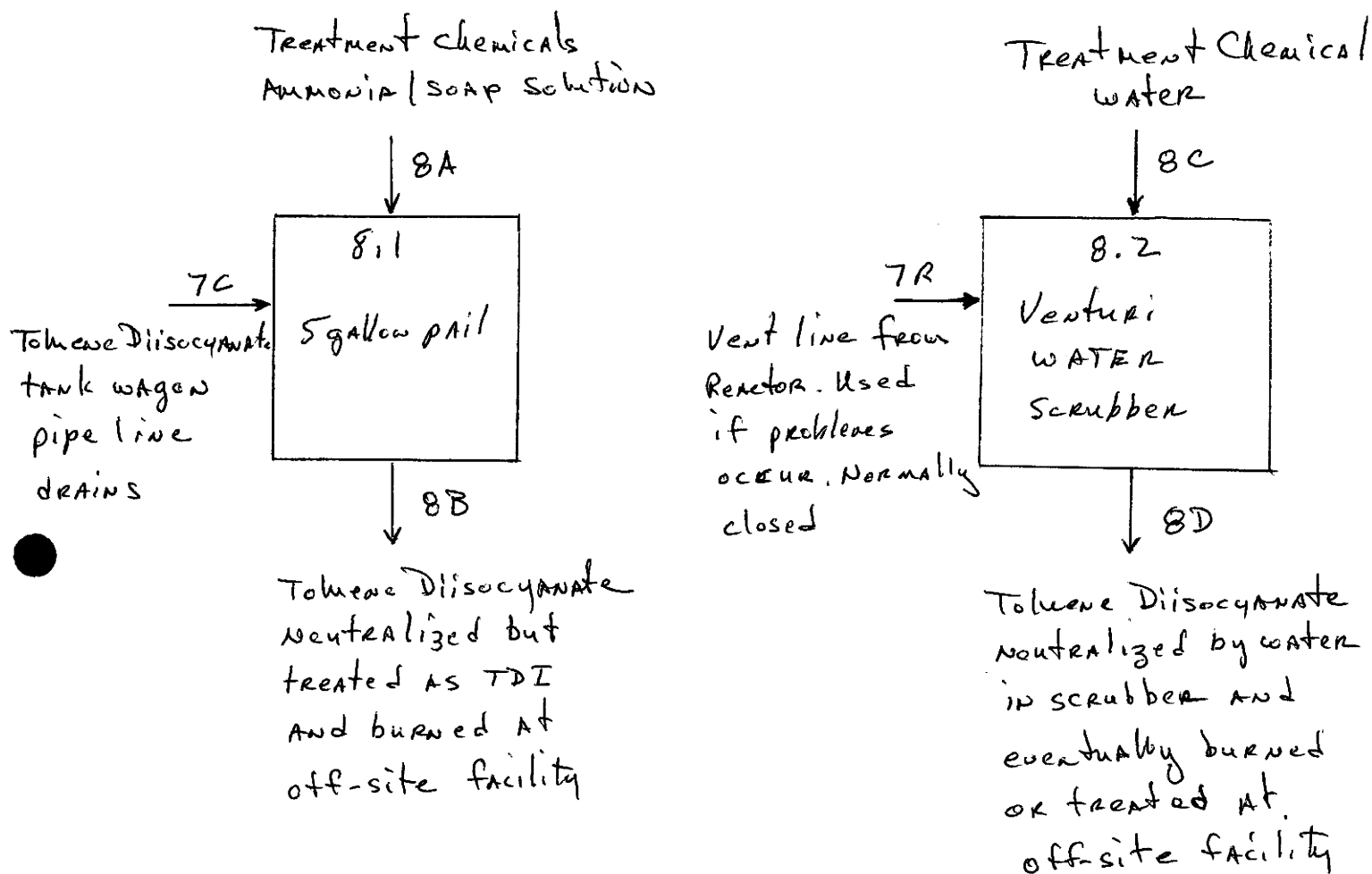
PART A RESIDUAL TREATMENT PROCESS DESCRIPTION

8.01 In accordance with the instructions, provide a residual treatment block flow diagram which describes the treatment process used for residuals identified in question 7.01.

CBI

Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol

☐ Process type ..... Blocked, Polymer Solution



☐ Mark (X) this box if you attach a continuation sheet.

PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol

[ ] Process type ..... Blocked, Polymer Solution

a.	b.	c.	d.	e.	f.	g.
Stream ID Code	Type of Hazardous Waste <sup>1</sup>	Physical State of Residual <sup>2</sup>	Known Compounds <sup>3</sup>	Concentrations (% or ppm) <sup>4,5,6</sup>	Other Expected Compounds	Estimated Concentrations (% or ppm)
8B	R,T	AL/SO	Urea	15% E	Soap	1% E
			Ammonia	2% E		
			Water	83% E		
8D	I	IL/SO	Naphtha 100	Unable to estimate composition		
			Urea	Only used in emergency		
			Water	Composition depends on where		
			Phenol	problem develops when processing		
			Cresylic Acid	batch.		

8.05 continued below

[ ] Mark (X) this box if you attach a continuation sheet.

---

8.05 (continued)

<sup>1</sup>Use the following codes to designate the type of hazardous waste:

I = Ignitable  
C = Corrosive  
R = Reactive  
E = EP toxic  
T = Toxic  
H = Acutely hazardous

<sup>2</sup>Use the following codes to designate the physical state of the residual:

GC = Gas (condensable at ambient temperature and pressure)  
GU = Gas (uncondensable at ambient temperature and pressure)  
SO = Solid  
SY = Sludge or slurry  
AL = Aqueous liquid  
OL = Organic liquid  
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

---

8.05 continued below

---

☐ Mark (X) this box if you attach a continuation sheet.

---

8.05 (continued)

<sup>3</sup>For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column d. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
<u>1</u>	<u>NA</u>	<u>NA</u>
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		

<sup>4</sup>Use the following codes to designate how the concentration was determined:

A = Analytical result

E = Engineering judgement/calculation

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

<sup>5</sup>Use the following codes to designate how the concentration was measured:

V = Volume

W = Weight

<sup>6</sup>Specify the analytical test methods used and their detection limits in the table below. Assign a code to each test method used and list those codes in column e.

<u>Code</u>	<u>Method</u>	<u>Detection Limit</u> <u>(± ug/l)</u>
<u>1</u>	NA	
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		

☐ Mark (X) this box if you attach a continuation sheet.

Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol

[ ]



<sup>2</sup>Use the codes provided in Exhibit 8-2 to designate the management methods



8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

<u>Incinerator</u>	<u>Combustion Chamber Temperature (°C)</u>		<u>Location of Temperature Monitor</u>		<u>Residence Time In Combustion Chamber (seconds)</u>	
	<u>Primary</u>	<u>Secondary</u>	<u>Primary</u>	<u>Secondary</u>	<u>Primary</u>	<u>Secondary</u>
<u>1</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>2</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>3</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes ..... 1

No ..... 2

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

☐

<u>Incinerator</u>	<u>Air Pollution Control Device<sup>1</sup></u>	<u>Types of Emissions Data Available</u>
<u>1</u>	<u>NA</u>	<u>NA</u>
<u>2</u>	<u>                    </u>	<u>                    </u>
<u>3</u>	<u>                    </u>	<u>                    </u>

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes ..... 1

No ..... 2

<sup>1</sup>Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)

E = Electrostatic precipitator

O = Other (specify) \_\_\_\_\_

☐ Mark (X) this box if you attach a continuation sheet.

PART A EMPLOYMENT AND POTENTIAL EXPOSURE PROFILE

9.01 Mark (X) the appropriate column to indicate whether your company maintains records on the following data elements for hourly and salaried workers. Specify for each data element the year in which you began maintaining records and the number of years the records for that data element are maintained. (Refer to the instructions for further explanation and an example.)

CBI

☐

Data Element	Data are Maintained for:		Year in Which* Data Collection Began	Number of Years Records Are Maintained
	Hourly Workers	Salaried Workers		
Date of hire	X	X	1988	45
Age at hire	X	X	1988	45
Work history of individual before employment at your facility	X	X	1988	45
Sex	X	X	1988	45
Race	X	X	1988	45
Job titles	X	X	1988	45
Start date for each job title	NA	NA	NA	NA
End date for each job title	NA	NA	NA	NA
Work area industrial hygiene monitoring data	X	NA	1988	30 yr. after leaving
Personal employee monitoring data	X	NA	1988	30 yr. after leaving
Employee medical history	X	X	1988	30 yr. after leaving
Employee smoking history	X	X	1988	30 yr. after leaving
Accident history	X	X	1988	5
Retirement date	X	X	1988	Until death of employee
Termination date	X	X	1988	45
Vital status of retirees	NA	NA	NA	NA
Cause of death data	NA	NA	NA	NA

\* New company March 18, 1988

☐ Mark (X) this box if you attach a continuation sheet.

9.02 In accordance with the instructions, complete the following table for each activity in which you engage.

CBI

☐

a.	b.	c.	d.	e.
<u>Activity</u>	<u>Process Category</u>	<u>Yearly Quantity (kg)</u>	<u>Total Workers</u>	<u>Total Worker-Hours</u>
Manufacture of the listed substance	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	NA	NA	NA
On-site use as reactant	Enclosed	NA	NA	NA
	Controlled Release	62330	14	774
	Open	NA	NA	NA
On-site use as nonreactant	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	NA	NA	NA
On-site preparation of products	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	NA	NA	NA

☐ Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

☐

Labor Category

Descriptive Job Title

A

Production Engineer

B

Production Control Specialist/Supervisor

C

Master Chemical Operator

D

Senior Chemical Operator

E

Shipper/Receiver

F

G

H

I

J

☐ Mark (X) this box if you attach a continuation sheet.

---

9.04 In accordance with the instructions, provide your process block flow diagram(s) and indicate associated work areas.

CBI

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

---

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☒ Mark (X) this box if you attach a continuation sheet.

---

9.05 Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add any additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Work Area ID

Description of Work Areas and Worker Activities

1	Tank truck unloading - worker in full protective gear (open valves, drains line and neutralizes)
2	Reactor area (loads reactor, monitors temperature gauges and turns valves)
3	
4	
5	
6	
7	
8	
9	
10	

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
☐ Process type ..... Blocked, Polymer Solution

Work area ..... 2

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
A	1	Inhalation	GU	E	8
B	1	Inhalation	GU	E	8
C	2	Inhalation	GU	E	8
D	8	Inhalation	GU	E	8

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)  
 SO = Solid

SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less  
 B = Greater than 15 minutes, but not exceeding 1 hour  
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours  
 E = Greater than 4 hours, but not exceeding 8 hours  
 F = Greater than 8 hours

☒ Mark (X) this box if you attach a continuation sheet.

CBI Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Work area ..... 1

\*Wears full protective gear during this time.

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PART B WORK PLACE MONITORING PROGRAM

9.08 If you monitor worker exposure to the listed substance, complete the following table.

CBI

☐

<u>Sample/Test</u>	<u>Work Area ID</u>	<u>Testing Frequency (per year)</u>	<u>Number of Samples (per test)</u>	<u>Who Samples<sup>1</sup></u>	<u>Analyzed In-House (Y/N)</u>	<u>Number of Years Records Maintained</u>
Personal breathing zone	NA	NA	NA	NA	NA	NA
General work area (air)	NA	NA	NA	NA	NA	NA
Wipe samples	NA	NA	NA	NA	NA	NA
Adhesive patches	NA	NA	NA	NA	NA	NA
Blood samples	NA	NA	NA	NA	NA	NA
Urine samples	NA	NA	NA	NA	NA	NA
Respiratory samples	NA	NA	NA	NA	NA	NA
Allergy tests	NA	NA	NA	NA	NA	NA
Other (specify)	NA	NA	NA	NA	NA	NA
Other (specify)	NA	NA	NA	NA	NA	NA
Other (specify)	NA	NA	NA	NA	NA	NA

<sup>1</sup>Use the following codes to designate who takes the monitoring samples:

A = Plant industrial hygienist

B = Insurance carrier

C = OSHA consultant

D = Other (specify) \_\_\_\_\_

☐ Mark (X) this box if you attach a continuation sheet.

9.09 For each sample type identified in question 9.08, describe the type of sampling and analytical methodology used for each type of sample.

<input type="checkbox"/> Sample Type	Sampling and Analytical Methodology
NA	NA

9.10 If you conduct personal and/or ambient air monitoring for the listed substance, specify the following information for each equipment type used.

CBI

<input type="checkbox"/> Equipment Type <sup>1</sup>	Detection Limit <sup>2</sup>	Manufacturer	Averaging Time (hr)	Model Number
E	A*	MDA Scientific, Inc.	384	7005
*parts per billion				

<sup>1</sup>Use the following codes to designate personal air monitoring equipment types:

A = Passive dosimeter

B = Detector tube

C = Charcoal filtration tube with pump

D = Other (specify) \_\_\_\_\_

Use the following codes to designate ambient air monitoring equipment types:

E = Stationary monitors located within work area

F = Stationary monitors located within facility

G = Stationary monitors located at plant boundary

H = Mobile monitoring equipment (specify) \_\_\_\_\_

I = Other (specify) \_\_\_\_\_

<sup>2</sup>Use the following codes to designate detection limit units:

A = ppm

B = Fibers/cubic centimeter (f/cc)

C = Micrograms/cubic meter ( $\mu\text{m}^3$ )

☐ Mark (X) this box if you attach a continuation sheet.

9.11 If you conduct routine medical tests for monitoring the health effects of exposure to the listed substance, specify the type and frequency of the tests.

CBI

<input type="checkbox"/>	<u>Test Description</u>	<u>Frequency</u> (weekly, monthly, yearly, etc.)
	NA	NA

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Work area ..... 1

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	N			
General dilution	N			
Other (specify)	N			
Vessel emission controls	N			
Mechanical loading or packaging equipment	N			
Other (specify)	N			

[X] Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct,  
Phenol Blocked, Polymer Solution

Work area ..... 1

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
NA	NA

☒ Mark (X) this box if you attach a continuation sheet.

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PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

---

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Work area ..... 1

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	<u>Y</u>
Safety goggles/glasses	<u>N</u>
Face shields	<u>Y</u>
Coveralls	<u>N</u>
Bib aprons	<u>N</u>
Chemical-resistant gloves	<u>Y</u>
Other (specify)	
<u>Completely covered in jacket and pants</u>	<u>Y</u>
_____	_____

---

☒ Mark (X) this box if you attach a continuation sheet.

---

- 9.15 If workers use respirators when working with the listed substance, specify for each process type, the work areas where the respirators are used, the type of respirators used, the average usage, whether or not the respirators were fit tested, and the type and frequency of the fit tests. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol Blocked, Polymer Solution

Work Area	Respirator Type	Average Usage <sup>1</sup>	Fit Tested (Y/N)	Type of Fit Test <sup>2</sup>	Frequency of Fit Tests (per year)
1	Supplied Air Positive Pressure Demand	E	N	NA	0
2	NA				

NOTE: All respirators are NIOSH IMSHA approved

<sup>1</sup>Use the following codes to designate average usage:

A = Daily  
 B = Weekly  
 C = Monthly  
 D = Once a year  
 E = Other (specify) 3 Times Per Year

<sup>2</sup>Use the following codes to designate the type of fit test:

QL = Qualitative  
 QT = Quantitative

Positive pressure demand masks eliminate the need for a good fit test.

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol Blocked, Polymer Solution

Work area ..... 1

1. Use isolated area of plant

2. Respirator protection

3. Training Program

4. Changing rooms with washer and dryer provided

9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol Blocked, Polymer Solution

Work area ..... 1

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	X			
Vacuuming	X			
Water flushing of floors	X			
Other (specify)				
Collect pipeline drains in pail	X			

☒ Mark (X) this box if you attach a continuation sheet.

9.21 Do you have a written medical action plan for responding to routine or emergency exposure to the listed substance?

Routine exposure

Yes ..... 1

No ..... 2

Emergency exposure

Yes ..... 1

No ..... 2

If yes, where are copies of the plan maintained?

Routine exposure: \_\_\_\_\_

Emergency exposure: \_\_\_\_\_

9.22 Do you have a written leak and spill cleanup plan that addresses the listed substance? Circle the appropriate response.

Yes ..... 1

No ..... ②

If yes, where are copies of the plan maintained? \_\_\_\_\_

Has this plan been coordinated with state or local government response organizations? Circle the appropriate response.

Yes ..... 1

No ..... ②

9.23 Who is responsible for monitoring worker safety at your facility? Circle the appropriate response.

Plant safety specialist ..... 1

Insurance carrier ..... 2

OSHA consultant ..... 3

Other (specify) \_\_\_\_\_ 4

☐ Mark (X) this box if you attach a continuation sheet.

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## SECTION 10 ENVIRONMENTAL RELEASE

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### General Instructions:

Complete Part E (questions 10.23-10.35) for each non-routine release involving the listed substance that occurred during the reporting year. Report on all releases that are equal to or greater than the listed substance's reportable quantity value, RQ, unless the release is federally permitted as defined in 42 U.S.C. 9601, or is specifically excluded under the definition of release as defined in 40 CFR 302.3(22). Reportable quantities are codified in 40 CFR Part 302. If the listed substance is not a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and, thus, does not have an RQ, then report releases that exceed 2,270 kg. If such a substance however, is designated as a CERCLA hazardous substance, then report those releases that are equal to or greater than the RQ. The facility may have answered these questions or similar questions under the Agency's Accidental Release Information Program and may already have this information readily available. Assign a number to each release and use this number throughout this part to identify the release. Releases over more than a 24-hour period are not single releases, i.e., the release of a chemical substance equal to or greater than an RQ must be reported as a separate release for each 24-hour period the release exceeds the RQ.

For questions 10.25-10.35, answer the questions for each release identified in question 10.23. Photocopy these questions and complete them separately for each release.

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### PART A GENERAL INFORMATION

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10.01 Where is your facility located? Circle all appropriate responses.

#### CBI

- ☐ Industrial area ..... ①
- Urban area ..... ②
- Residential area ..... 3
- Agricultural area ..... 4
- Rural area ..... 5
- Adjacent to a park or a recreational area ..... ⑥
- Within 1 mile of a navigable waterway ..... ⑦
- Within 1 mile of a school, university, hospital, or nursing home facility ..... ⑧
- Within 1 mile of a non-navigable waterway ..... ⑨
- Other (specify) \_\_\_\_\_ 10

---

☐ Mark (X) this box if you attach a continuation sheet.

---

10.02 Specify the exact location of your facility (from central point where process unit is located) in terms of latitude and longitude or Universal Transverse Mercader (UTM) coordinates.

Latitude ..... 42 ° 48 ' 20 "

Longitude ..... 073 ° 59 ' 00 "

UTM coordinates ..... Zone NA , Northing NA , Easting NA

10.03 If you monitor meteorological conditions in the vicinity of your facility, provide the following information.

Average annual precipitation ..... inches/year

Predominant wind direction .....

10.04 Indicate the depth to groundwater below your facility.

Depth to groundwater ..... meters

10.05 For each on-site activity listed, indicate (Y/N/NA) all routine releases of the listed substance to the environment. (Refer to the instructions for a definition of CBI Y, N, and NA.)

☐

On-Site Activity	Environmental Release		
	Air	Water	Land
Manufacturing	NA	NA	NA
Importing	NA	NA	NA
Processing	Y	N	N
Otherwise used	NA	NA	NA
Product or residual storage	NA	NA	NA
Disposal	NA	NA	NA
Transport	NA	NA	NA

☐ Mark (X) this box if you attach a continuation sheet.

10.06 Provide the following information for the listed substance and specify the level of precision for each item. (Refer to the instructions for further explanation and an example.)

CBI

☐

Quantity discharged to the air .....	<u>0.2</u>	kg/yr ± <u>20</u> %
Quantity discharged in wastewaters .....	<u>0</u>	kg/yr ± <u>   </u> %
Quantity managed as other waste in on-site treatment, storage, or disposal units .....	<u>0</u>	kg/yr ± <u>   </u> %
Quantity managed as other waste in off-site treatment, storage, or disposal units .....	<u>45</u>	kg/yr ± <u>2</u> %

☐ Mark (X) this box if you attach a continuation sheet.

10.08 Describe the control technologies used to minimize release of the listed substance for each process stream containing the listed substance as identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each process type.

CBI

☐

Process type .....

Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

<u>Stream ID Code</u>	<u>Control Technology</u>	<u>Percent Efficiency</u>
7C,K,L,M,N,O	Enclosed Pipe	100%
7P	Condenser	95%
7Q	None	0%
7R	Line normally shut off by valve	100%
7S	None	0%
7T	None	0%

☐ Mark (X) this box if you attach a continuation sheet.

PART B RELEASE TO AIR

- 10.09 Point Source Emissions -- Identify each emission point source containing the listed substance in terms of a Stream ID Code as identified in your process block or residual treatment block flow diagram(s), and provide a description of each point source. Do not include raw material and product storage vents, or fugitive emission sources (e.g., equipment leaks). Photocopy this question and complete it separately for each process type.

Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Point Source  
ID Code

Description of Emission Point Source

7P

Reactor Condenser Vent

7Q which exits through 7T

Air Eliminator

☐ Mark (X) this box if you attach a continuation sheet.

☐ Mark (X) this box if you attach a continuation sheet.

10.10 Emission Characteristics - - Characterize the emissions for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

<input type="checkbox"/>	Point Source ID Code	Physical State <sup>1</sup>	Average Emissions (kg/day)	Frequency <sup>2</sup> (days/yr)	Duration <sup>3</sup> (min/day)	Average Emission Factor <sup>4</sup>	Maximum Emission Rate (kg/min)	Maximum Emission Rate Frequency (events/yr)	Maximum Emission Rate Duration (min/event)
	7P	V	0.0041	8	720	0.0000005	0.00007	8	9.5
7Q exits thru	7T	V	0.00001	8	33.6	0.000000001	0.0000008	8	33.6

<sup>1</sup>Use the following codes to designate physical state at the point of release:  
G = Gas; V = Vapor; P = Particulate; A = Aerosol; O = Other (specify) \_\_\_\_\_

<sup>2</sup>Frequency of emission at any level of emission

<sup>3</sup>Duration of emission at any level of emission

<sup>4</sup>Average Emission Factor — Provide estimated ( $\pm$  25 percent) emission factor (kg of emission per kg of production of listed substance)

10.11 Stack Parameters -- Identify the stack parameters for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

☐

Point Source ID Code	Stack Height(m)	Stack Inner Diameter (at outlet) (m)	Exhaust Temperature (°C)	Emission Exit Velocity (m/sec)	Building Height(m) <sup>1</sup>	Building Width(m) <sup>2</sup>	Vent Type <sup>3</sup>
7P	7.9	0.102	30	0.104	5.4	46	H
7Q exits thru 7T	7.6	0.205	15	0.044	5.4	46	V

<sup>1</sup>Height of attached or adjacent building

<sup>2</sup>Width of attached or adjacent building

<sup>3</sup>Use the following codes to designate vent type:

H = Horizontal

V = Vertical

☐ Mark (X) this box if you attach a continuation sheet.

10.12 If the listed substance is emitted in particulate form, indicate the particle size distribution for each Point Source ID Code identified in question 10.09.  
Photocopy this question and complete it separately for each emission point source.

CBI

☐

Point source ID code ..... NA

Size Range (microns)

Mass Fraction (%  $\pm$  % precision)

< 1

$\geq 1$  to < 10

$\geq 10$  to < 30

$\geq 30$  to < 50

$\geq 50$  to < 100

$\geq 100$  to < 500

$\geq 500$

Total = 100%

☐ Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

- 10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Percentage of time per year that the listed substance is exposed to this process type ..... Toluene Diisocyanate Tank ..... 100 %  
Reactor ..... 1 %

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					Greater than 99%
	Less than 5%	5-10%	11-25%	26-75%	76-99%	
Pump seals <sup>1</sup>						
Packed	NA	NA	NA	NA	NA	1
Mechanical	NA	NA	NA	NA	NA	NA
Double mechanical <sup>2</sup>	NA	NA	NA	NA	NA	NA
Compressor seals <sup>1</sup>	NA	NA	NA	NA	NA	NA
Flanges	25	0	0	2	0	24
Valves						
Gas <sup>3</sup>	6	NA	NA	NA	NA	NA
Liquid	NA	NA	NA	1	NA	9
Pressure relief devices <sup>4</sup> (Gas or vapor only)	NA	NA	NA	NA	NA	NA
Sample connections						
Gas	NA	NA	NA	NA	NA	NA
Liquid	NA	NA	NA	NA	NA	NA
Open-ended lines <sup>5</sup> (e.g., purge, vent)						
Gas	2	NA	NA	NA	NA	NA
Liquid	NA	NA	NA	NA	NA	NA

<sup>1</sup>List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

☐ Mark (X) this box if you attach a continuation sheet.

## 10.13 (continued)

<sup>2</sup> If double mechanical seals are operated with the barrier (B) fluid at a pressure greater than the pump stuffing box pressure and/or equipped with a sensor (S) that will detect failure of the seal system, the barrier fluid system, or both, indicate with a "B" and/or an "S", respectively

<sup>3</sup>Conditions existing in the valve during normal operation

<sup>4</sup>Report all pressure relief devices in service, including those equipped with control devices

<sup>5</sup> Lines closed during normal operation that would be used during maintenance operations

10.14 Pressure Relief Devices with Controls -- Complete the following table for those pressure relief devices identified in 10.13 to indicate which pressure relief devices in service are controlled. If a pressure relief device is not controlled, enter "None" under column c.

[ ]

[illegible]

<sup>1</sup>Refer to the table in question 10.13 and record the percent range given under the heading entitled "Number of Components in Service by Weight Percent of Listed Substance" (e.g., <5%, 5-10%, 11-25%, etc.)

<sup>2</sup>The EPA assigns a control efficiency of 100 percent for equipment leaks controlled with rupture discs under normal operating conditions. The EPA assigns a control efficiency of 98 percent for emissions routed to a flare under normal operating conditions

☐ Mark (X) this box if you attach a continuation sheet.

10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... NA

Equipment Type	Leak Detection Concentration (ppm or mg/m <sup>3</sup> ) Measured at	Detection Device <sup>1</sup>	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repairs Completed (days after initiated)
	Inches from Source				
Pump seals					
Packed					
Mechanical					
Double mechanical					
Compressor seals					
Flanges					
Valves					
Gas					
Liquid					
Pressure relief devices (gas or vapor only)					
Sample connections					
Gas					
Liquid					
Open-ended lines					
Gas					
Liquid					

<sup>1</sup>Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer

FPM = Fixed point monitoring

0 = Other (specify) \_\_\_\_\_

☐ Mark (X) this box if you attach a continuation sheet.

☐ Mark (X) this box if you attach a continuation sheet.

- 10.16 Raw Material, Intermediate and Product Storage Emissions - - Complete the following table by providing the information on each liquid raw material, intermediate, and product storage vessel containing the listed substance as identified in your process block or residual treatment block flow diagram(s).

CBI

☐

Vessel Type <sup>1</sup>	Floating Roof <sup>2</sup> Seals	Composition of Stored Materials <sup>3</sup>	Throughput (liters per year)	Vessel Filling Rate (gpm)	Vessel Filling Duration (min)	Vessel Inner Diameter (m)	Vessel Height (m)	Operating Volume (l)	Vessel Emission Controls <sup>4</sup>	Design Flow Rate <sup>5</sup>	Vent Diameter (cm)	Control Efficiency (%)	Basis for Estimate <sup>6</sup>
5 PU PSI	NA	99.7%	51054	90	45	3.64	3.66	37850	NA	NA	5	NA	NA

<sup>1</sup>Use the following codes to designate vessel type:

F = Fixed roof  
 CIF = Contact internal floating roof  
 NCIF = Noncontact internal floating roof  
 EFR = External floating roof  
 P = Pressure vessel (indicate pressure rating)  
 H = Horizontal  
 U = Underground

<sup>2</sup>Use the following codes to designate floating roof seals:

MS1 = Mechanical shoe, primary  
 MS2 = Shoe-mounted secondary  
 MS2R = Rim-mounted, secondary  
 LM1 = Liquid-mounted resilient filled seal, primary  
 LM2 = Rim-mounted shield  
 LMW = Weather shield  
 VM1 = Vapor mounted resilient filled seal, primary  
 VM2 = Rim-mounted secondary  
 VMW = Weather shield

<sup>3</sup>Indicate weight percent of the listed substance. Include the total volatile organic content in parenthesis

<sup>4</sup>Other than floating roofs

<sup>5</sup>Gas/vapor flow rate the emission control device was designed to handle (specify flow rate units)

<sup>6</sup>Use the following codes to designate basis for estimate of control efficiency:

C = Calculations  
 S = Sampling

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PART E NON-ROUTINE RELEASES

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- 10.23 Indicate the date and time when the release occurred and when the release ceased or was stopped. If there were more than six releases, attach a continuation sheet and list all releases.

<u>Release</u>	<u>Date Started</u>	<u>Time (am/pm)</u>	<u>Date Stopped</u>	<u>Time (am/pm)</u>
<u>1</u>	<u>NA</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>2</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>3</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>4</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>5</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>6</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

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- 10.24 Specify the weather conditions at the time of each release.

<u>Release</u>	<u>Wind Speed (km/hr)</u>	<u>Wind Direction</u>	<u>Humidity (%)</u>	<u>Temperature (°C)</u>	<u>Precipitation (Y/N)</u>
<u>1</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>2</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>3</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>4</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>5</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>6</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

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☐ Mark (X) this box if you attach a continuation sheet.

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APPENDIX I: List of Continuation Sheets

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Attach continuation sheets for sections of this form and optional information after this page. In column 1, clearly identify the continuation sheet by listing the question number to which it relates. In column 2, enter the inclusive page numbers of the continuation sheet for each question number.

Question Number (1)	Continuation Sheet Page Numbers (2)
4.02	25A to 25H
7.01	42A
7.03	44A
7.05	46A TO 46B
7.06	47A TO 47F
9.04	91A
9.06	93A
9.07	94A
9.12	98A
9.13	99A
9.14	100A
9.19	105A
9.20	105A

☐ Mark (X) this box if you attach a continuation sheet.

# MATERIAL SAFETY DATA SHEET

**Mobay Corporation**  
A Bayer USA INC. COMPANY



DIVISION ADDRESS

MOBAY CORPORATION  
Polyurethane Division  
Mobay Road  
Pittsburgh, PA 15205-9741

ISSUE DATE  
SUPERSEDES

3/20/89  
1/2/89

TRANSPORTATION EMERGENCY: CALL CHEMTREC  
TELEPHONE NO: 800-424-9300; DISTRICT OF COLUMBIA: 202-483-7616

MOBAY NON-TRANSPORTATION EMERGENCY NO.:  
(412) 923-1800

## I. PRODUCT IDENTIFICATION

PRODUCT NAME.....: Mondur TD-80 (All Grades)  
PRODUCT CODE NUMBER.....: E-002  
CHEMICAL FAMILY.....: Aromatic Isocyanate  
CHEMICAL NAME.....: Toluene Diisocyanate (TDI)  
SYNONYMS.....: Benzene, 1,3-diisocyanato methyl-  
CAS NUMBER.....: 26471-62-5  
T.S.C.A. STATUS.....: This product is listed on the TSCA Inventory.  
OSHA HAZARD COMMUNICATION  
STATUS.....: This product is hazardous under the criteria of  
the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.  
CHEMICAL FORMULA.....:  $C_9H_6N_2O_2$

## II. HAZARDOUS INGREDIENTS

COMPONENTS:	%:	OSHA-PEL	ACGIH-TLV
2,4-Toluene Diisocyanate* (TDI) CAS# 584-84-9	80	0.02 ppm STEL 0.005 ppm 8HR TWA	0.005 ppm TWA 0.02 ppm STEL
2,6-Toluene Diisocyanate* (TDI) CAS# 91-08-7	20	Not Established	Not Established

\*For Section 302 and 313 SARA information refer to Page 6, Section IX, SARA.

## III. PHYSICAL DATA

APPEARANCE.....: Liquid  
COLOR.....: Water white to pale yellow  
ODOR.....: Sharp, pungent  
ODOR THRESHOLD.....: Greater than TLV of 0.005 ppm  
MOLECULAR WEIGHT.....: 174  
MELT POINT/FREEZE POINT....: Approx. 55°F (13°C) for TDI  
BOILING POINT.....: Approx. 484°F (251°C) for TDI  
VAPOR PRESSURE.....: Approx. 0.025 mmHg @ 77°F (25°C) for TDI  
VAPOR DENSITY (AIR=1).....: 6.0 for TDI  
pH.....: Not Applicable  
SPECIFIC GRAVITY.....: 1.22 @ 77°F (25°C)  
BULK DENSITY.....: 10.18 lbs/gal  
SOLUBILITY IN WATER.....: Not Soluble. Reacts slowly with water at normal  
room temperature to liberate CO<sub>2</sub> gas.  
% VOLATILE BY VOLUME.....: Negligible

Product Code: E-002  
Page 1 of 8

#### IV. FIRE & EXPLOSION DATA

FLASH POINT  $^{\circ}\text{F}(^{\circ}\text{C})$ .....: 260 $^{\circ}\text{F}$  (127 $^{\circ}\text{C}$ ) Pensky-Martens Closed Cup  
FLAMMABLE LIMITS -

Lel.....: 0.9%

Uel.....: 9.5%

EXTINGUISHING MEDIA.....: Dry chemical (e.g. monoammonium phosphate, potassium sulfate, and potassium chloride), carbon dioxide, high expansion (proteinic) chemical foam, water spray for large fires. Caution: Reaction between water or foam and hot TDI can be vigorous.

#### SPECIAL FIRE FIGHTING PROCEDURES/UNUSUAL FIRE OR EXPLOSION HAZARDS:

Full emergency equipment with self-contained breathing apparatus and full protective clothing (such as rubber gloves, boots, bands around legs, arms and waist) should be worn by fire fighters. No skin surface should be exposed. During a fire, TDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. (See Section VIII). At temperatures greater than 350 $^{\circ}\text{F}$  (177 $^{\circ}\text{C}$ ) TDI forms carbodiimides with the release of  $\text{CO}_2$ , which can cause pressure build-up in closed containers. Explosive rupture is possible. Therefore, use cold water to cool fire-exposed containers.

#### V. HUMAN HEALTH DATA

##### PRIMARY ROUTE(S) OF

ENTRY.....: Inhalation. Skin contact from liquid, vapors or aerosols.

##### EFFECTS AND SYMPTOMS OF OVEREXPOSURE

###### INHALATION

Acute Exposure. TDI vapors or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure.

Chronic Exposure. As a result of previous repeated overexposures or a single large dose, certain individuals may develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanate has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

## V. HUMAN HEALTH DATA (Continued)

### SKIN CONTACT

**Acute Exposure.** Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove.

**Chronic Exposure.** Prolonged contact can cause reddening, swelling, rash, scaling, blistering, and, in some cases, skin sensitization. Individuals who have developed a skin sensitization can develop these symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor.

### EYE CONTACT

**Acute Exposure.** Liquid, aerosols or vapors are severely irritating and can cause pain, tearing, reddening and swelling. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible. See Section VI for treatment.

**Chronic Exposure.** Prolonged vapor contact may cause conjunctivitis.

### INGESTION

**Acute Exposure.** Can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

**Chronic Exposure.** None Found

### MEDICAL CONDITIONS

**AGGRAVATED BY EXPOSURE..:** Asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyperreactivity), skin allergies, eczema.

**CARCINOGENICITY.....:** No carcinogenic activity was observed in lifetime inhalation studies in rats and mice (International Isocyanate Institute).

**NTP.....:** The National Toxicology Program reported that TDI caused an increase in the number of tumors in exposed rats over those counted in non-exposed rats. The TDI was administered in corn-oil and introduced into the stomach through a tube. Based on this study, the NTP has listed TDI as a substance that may reasonably be anticipated to be a carcinogen in its Fourth Annual Report on Carcinogens.

**IARC.....:** IARC has announced that it will list TDI as a substance for which there is sufficient evidence for its carcinogenicity in experimental animals but inadequate evidence for the carcinogenicity of TDI to humans (IARC Monograph 39).

**OSHA.....:** Not listed.

### EXPOSURE LIMITS

**OSHA PEL.....:** 0.02 ppm STEL/0.005 ppm 8HR TWA for 2,4'-TDI

**ACGIH TLV.....:** 0.005 ppm TWA/0.02 ppm STEL

## VI. EMERGENCY & FIRST AID PROCEDURES

**EYE CONTACT.....:** Flush with copious amounts of water, preferably lukewarm for at least 15 minutes holding eyelids open all the time. Refer individual to physician or an ophthalmologist for immediate follow-up.

## VI. EMERGENCY & FIRST AID PROCEDURE (Continued)

**SKIN CONTACT**.....: Remove contaminated clothing immediately. Wash affected areas thoroughly with soap and water for at least 15 minutes. Tincture of green soap and water is also effective in removing isocyanates. Wash contaminated clothing thoroughly before reuse. For severe exposures, get under safety shower after removing clothing, then get medical attention. For lesser exposures, seek medical attention if irritation develops or persists after the area is washed.

**INHALATION**.....: Move to an area free from risk of further exposure. Administer oxygen or artificial respiration as needed. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Consult physician.

**INGESTION**.....: Do not induce vomiting. Give 1 to 2 cups of milk or water to drink. **DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.** Consult physician.

**NOTE TO PHYSICIAN**.....: Eyes. Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. Skin. This compound is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burns. Ingestion. Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of this compound. Respiratory. This compound is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a skin or pulmonary sensitization reaction to this material should be removed from exposure to any isocyanate.

## VII. EMPLOYEE PROTECTION RECOMMENDATIONS

**EYE PROTECTION**.....: Liquid chemical goggles or full-face shield. Contact lenses should not be worn. If vapor exposure is causing irritation, use a full-face, air-supplied respirator.

**SKIN PROTECTION**.....: Chemical resistant gloves (butyl rubber, nitrile rubber, polyvinyl alcohol). However, please note that PVA degrades in water. Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area covered only by the cream to a minimum.

**RESPIRATORY PROTECTION**....: An approved positive pressure air-supplied respirator is required whenever TDI concentrations are not known or exceed the Short-Term Exposure or Ceiling Limit of 0.02 ppm or exceed the 8-hour Time Weighted Average TLV of 0.005 ppm. An approved air-supplied respirator with full facepiece must also be worn during spray application, even if exhaust ventilation is used. For emergency and other conditions where the exposure limits may be greatly exceeded, use an approved, positive pressure self-contained breathing apparatus. TDI has poor warning properties since the odor at which TDI can be smelled is substantially higher than 0.02 ppm. Observe OSHA regulations for respirator use (29 CFR 1910.134).

## VII. EMPLOYEE PROTECTION RECOMMENDATIONS (Continued)

**VENTILATION**.....: Local exhaust should be used to maintain levels below the TLV whenever TDI is handled, processed, or spray-applied. At normal room temperatures (70°F) TDI levels quickly exceed the TLV unless properly ventilated. Standard reference sources regarding industrial ventilation (e.g., ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation.

**MONITORING**.....: TDI exposure levels must be monitored by accepted monitoring techniques to ensure that the TLV is not exceeded. (Contact Mobay for guidance). See Volume 1 (Chapter 17) and Volume 3 (Chapter 3) in Patty's Industrial Hygiene and Toxicology for sampling strategy.

**MEDICAL SURVEILLANCE**.....: Medical supervision of all employees who handle or come in contact with TDI is recommended. These should include preemployment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum). Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with TDI. Once a person is diagnosed as sensitized to TDI, no further exposure can be permitted.

**OTHER**.....: Safety showers and eyewash stations should be available. Educate and train employees in safe use of product. Follow all label instructions.

## VIII. REACTIVITY DATA

**STABILITY**.....: Stable under normal conditions.

**POLYMERIZATION**.....: May occur if in contact with moisture or other materials which react with isocyanates. Self-reaction may occur at temperatures over 350°F (177°C) or at lower temperatures if sufficient time is involved. See Section IV.

### **INCOMPATIBILITY**

**(MATERIALS TO AVOID)**.....: Water, amines, strong bases, alcohols. Will cause some corrosion to copper alloys and aluminum. Reacts with water to form heat, CO<sub>2</sub> and insoluble ureas.

### **HAZARDOUS DECOMPOSITION**

**PRODUCTS**.....: By high heat and fire: carbon monoxide, oxides of nitrogen, traces of HCN, TDI vapors and mist.

## IX. SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment, including respiratory equipment during clean-up. (See Section VII).

**Major Spill:** Call Mobay at 412/923-1800. If transportation spill, call CHEMTREC 800/424-9300. If temporary control of isocyanate vapor is required, a blanket of protein foam (available at most fire departments) may be placed over the spill. Large quantities may be pumped into closed, but not sealed, container for disposal.

Product Code: E-002

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## IX. SPILL OR LEAK PROCEDURES (Continued)

**Minor Spill:** Absorb isocyanate with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well-ventilated area (outside) and treat with neutralizing solution: mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (20%), or; water (90%), concentrated ammonia (3-8%) and detergent (2%). Add about 10 parts of neutralizer per part of isocyanate, with mixing. Allow to stand uncovered for 48 hours to let CO<sub>2</sub> escape.

**Clean-up:** Decontaminate floor with decontamination solution letting stand for at least 15 minutes.

**CERCLA (SUPERFUND) REPORTABLE QUANTITY:** 100 pounds for TDI

**WASTE DISPOSAL METHOD.....:** Follow all federal, state or local regulations. TDI must be disposed of in a permitted incinerator or landfill. Incineration is the preferred method for liquids. Solids are usually incinerated or landfilled. Empty containers must be handled with care due to product residue. Decontaminate containers prior to disposal. Empty decontaminated containers should be crushed to prevent reuse. DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH. (See Sections IV and VIII). Vapors and gases may be highly toxic.

**RCRA STATUS.....:** TDI is listed as a hazardous waste (No. U-223) under Title 40 Code of Federal Regulations, Section 261.33 (f). The residue from decontaminating a TDI spill is also classified as a hazardous waste under Section 261.3 (c)(2) or RCRA.

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA), TITLE III:**

Section 302 - Extremely Hazardous Substances: 2,4-Toluene Diisocyanate (TDI)  
CAS# 584-84-9 = 80%

2,6-Toluene Diisocyanate (TDI)  
CAS# 91-08-7 = 20%

Section 313 - Toxic Chemicals: 2,4-Toluene Diisocyanate (TDI)  
CAS# 584-84-9 = 80%  
2,6-Toluene Diisocyanate (TDI)  
CAS# 91-08-7 = 20%

## X. SPECIAL PRECAUTIONS & STORAGE DATA

### **STORAGE TEMPERATURE**

(MIN./MAX.).....: 70°F (21°C)/90°F (32°C)

**AVERAGE SHELF LIFE.....:** 12 months

### **SPECIAL SENSITIVITY**

(HEAT, LIGHT, MOISTURE).: If container is exposed to high heat, 375°F (177°C) it can be pressurized and possibly rupture. TDI reacts slowly with water to form polyureas and liberates CO<sub>2</sub> gas. This gas can cause sealed containers to expand and possibly rupture.

### **PRECAUTIONS TO BE TAKEN**

**IN HANDLING AND STORING.:** Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Prevent all contact. Do not breathe the vapors. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent chronic overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Exposure to vapors of heated TDI can be extremely dangerous. Employee education and training in safe handling of this product are required under the OSHA Hazard Communication Standard.

## **XI. SHIPPING DATA**

D.O.T. SHIPPING NAME.....: Toluene Diisocyanate  
TECHNICAL SHIPPING NAME....: Toluene Diisocyanate (TDI)  
D.O.T. HAZARD CLASS.....: Poison B  
UN/NA NO.....: UN 2078  
PRODUCT RQ.....: 100 pounds  
D.O.T. LABELS.....: Poison  
D.O.T. PLACARDS.....: Poison  
FRT. CLASS BULK.....: Toluene Diisocyanate  
FRT. CLASS PKG.....: Chemicals, NOI (Toluene Diisocyanate) NMFC 60000  
PRODUCT LABEL.....: Mondur TD-80 Product Label

## **XII. ANIMAL TOXICITY DATA**

### **ACUTE TOXICITY**

ORAL, LD50.....: Range of 4130-6170 mg/kg (Rats and Mice)  
DERMAL, LD50.....: Greater than 10,000 mg/kg (Rabbits)  
INHALATION, LC50.(4 hr)..: Range of 16-50 ppm (Rat), 10 ppm (Mouse),  
11 ppm (Rabbit), 13 ppm (Guinea Pig).  
EYE EFFECTS.....: Severe eye irritant capable of inducing corneal  
opacity.

SKIN EFFECTS.....: Moderate skin irritant. Primary dermal  
irritation score: 4.12/8.0 (Draize). However, repeated or prolonged  
contact may culminate in severe skin irritation and/or corrosion.

SENSITIZATION.....: Skin sensitizer in guinea pigs. One study  
using guinea pigs reported that repeated skin contact with TDI caused  
respiratory sensitization. Although poorly defined in experimental animal  
models, TDI is known to be a pulmonary sensitizer in humans. In addition,  
there is some evidence that cross-sensitization between different types of  
diisocyanates may occur.

SUB-CHRONIC/CHRONIC TOXICITY: Sub-chronic and chronic animal studies show  
that the primary effects of inhaling vapors and/or aerosols of TDI are  
restricted to the pulmonary systems. Emphysema, pulmonary edema, pneumonitis  
and rhinitis are common pathologic effects. Extended exposures to as low as  
0.1 ppm TDI have induces pulmonary inflammation.

### **OTHER**

CARCINOGENICITY.....: The NTP conducted carcinogenesis studies of a  
commercial grade TDI using rats and mice in which the test material was  
diluted in corn oil and administered by gavage. The investigators concluded  
that TDI was carcinogenic in male and female rats (fibrosarcomas, pancreatic  
adenomas, neoplastic liver nodules and mammary gland fibrosarcomas) and  
female mice (hemangiosarcomas and hepatocellular adenomas). However,  
chronic inhalation studies in which rats and mice were exposed to 0.05 and  
0.15 ppm TDI (10-30 times recommended TLV, 8-hr level) induced no  
treatment-related tumorigenic effects. In these studies, both exposure  
levels produced extensive irritation to the nasal passages and upper  
respiratory system of the test animals indicating that suitable effective  
exposures were administered.

Product Code: E-002

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## XII. ANIMAL TOXICITY DATA (Continued)

**MUTAGENICITY**.....: TDI is positive in the Ames assay with activation. However, mammalian cell transformation assays using human lung cells and Syrian hamster kidney cells were negative, as were micronucleus tests using rats and mice.

**TERATOGENICITY**.....: Rats were exposed to an 80:20 mixture of 2,4- and 2,6- toluene diisocyanate vapor at analytical concentrations of 0.021, 0.12 and 0.48 ppm. Minimal fetotoxicity was observed at a maternally toxic concentrations of 0.48 ppm. The NOEL for maternal and developmental toxicity was 0.12 ppm. No embryotoxicity or teratogenicity was observed.

**AQUATIC TOXICITY**.....: LC<sub>50</sub> - 96 hr (static): 165 mg/liter (Fathead minnow)  
LC<sub>50</sub> - 96 hr (static): Greater than 508 mg/liter (Grass shrimp)  
LC<sub>50</sub> - 24 hr (static): Greater than 500 mg/liter (Daphnia magna)

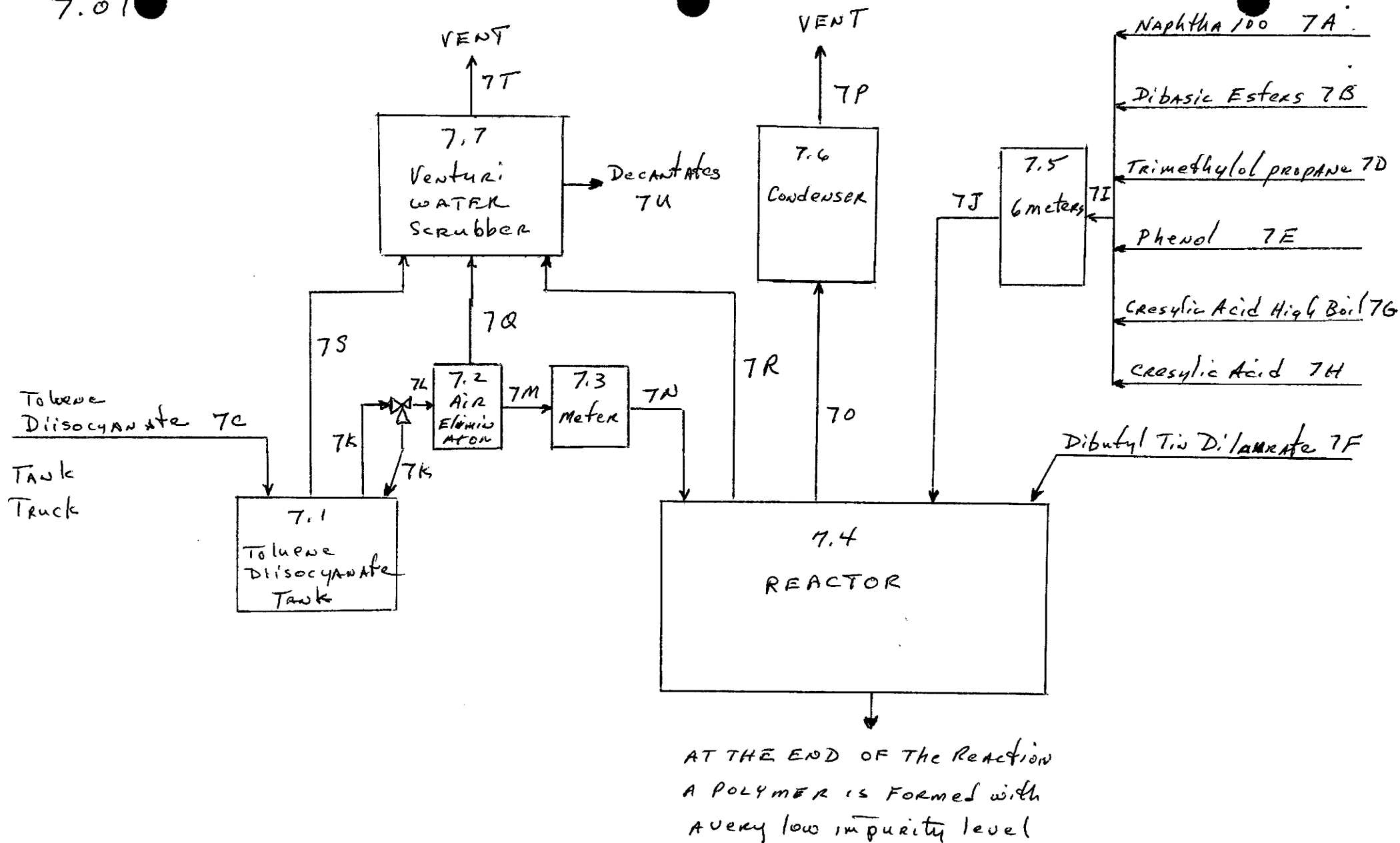
## XIII. APPROVALS

**REASON FOR ISSUE**.....: Revising TLV in Sections II and V  
**PREPARED BY**.....: G. L. Copeland  
**APPROVED BY**.....: J. H. Chapman  
**TITLE**.....: Manager, Product Safety - Polyurethane & Coatings

Product Code: E-002  
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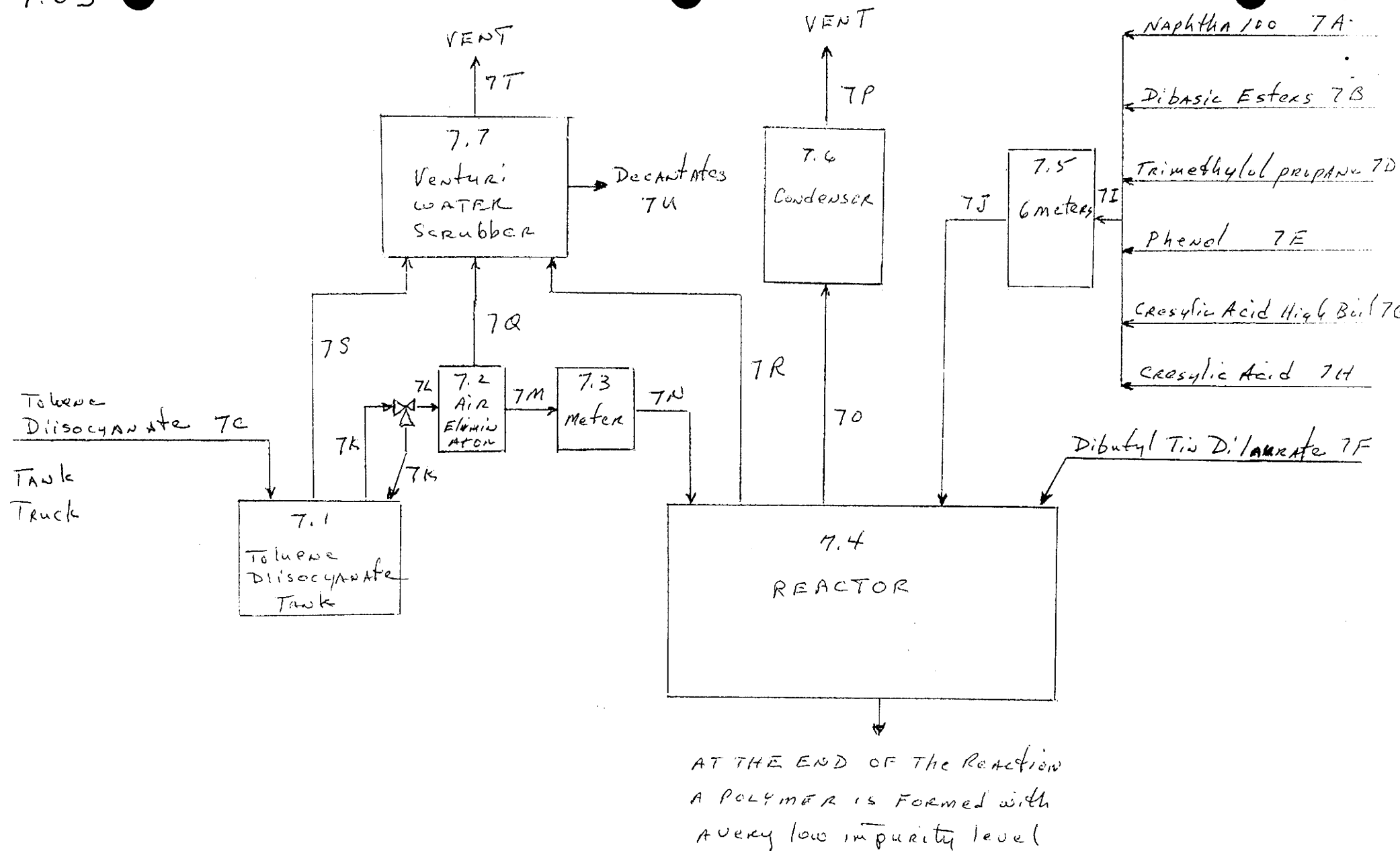
25 H

7.01



Toluene Diisocyanate, Trimethylol Propane adduct, Phenol blocked, Polymer Solution

7.03



Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol Blocked, Polymer Solution  
44A

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Toluene diisocyanate, Trimethylol phenol adduct, phenol blocked, polymer solution

<u>Process Stream ID Code</u>	<u>Process Stream Description</u>	<u>Physical State<sup>1</sup></u>	<u>Stream Flow (kg/yr)</u>
7I	Total of 7A, 7B, 7D, 7E, 7G, 7H	OL	213956
7J	Same as 7I	OL	213956
7K	Toluene Diisocyanate	OL	62330
7L	Toluene Diisocyanate	OL	62330
7M	Toluene Diisocyanate	OL	62330
7N	Toluene Diisocyanate	OL	62330
7O	Reactor Vent	GC/GU	191
7P	Reactor Condensor Vent	GC/GU	191

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
GU = Gas (uncondensable at ambient temperature and pressure)  
SO = Solid  
SY = Sludge or slurry  
AL = Aqueous liquid  
OL = Organic liquid  
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☒ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Toluene diisocyanate, Trimethylol propane adduct, phenol blocked, polymer solution

Process Stream ID Code	Process Stream Description	Physical State <sup>1</sup>	Stream Flow (kg/yr)
7Q	Air Eliminator Vent	GC/GU	3
7R	Reactor Manhole Vent	<del>Not Used</del>	0
7S	Toluene Diisocyanate Tank Vent	GC/GU	961
7T	Venturi Water Scrubber Vent	GC/GU	964
7U	Venturi Scrubber Decantate	IL*	1514
* Water 96% Naphtha 100, phenol, cresylic acid, urea 4%			

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
GU = Gas (uncondensable at ambient temperature and pressure)  
SO = Solid  
SY = Sludge or slurry  
AL = Aqueous liquid  
OL = Organic liquid  
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... Toluene diisocyanate, trimethylol propane adduct, phenol blocked, polymer solution

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7D	Trimethylol Propane	>98.5% AW	UK	NA
7E	Phenol	99.997% AW	Mesityl Oxide	.0015% AW
			Cumene	.0005% AW
			<del>α</del> Methyl Styrene	.001% AW
7F	Dibutyl Tin Dilaurate	>95% AW	UK	NA

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... Toluene diisocyanate, Trimethylol propane adduct, phenol blocked, polymer solution

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7G	Cresylic Acid High Boil	100% AW	NA	NA
7H	Cresylic Acid	100% AW	NA	NA
7I, 7J	Individual Components of 7A, 7B, 7D, 7E, 7G, 7H			

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol Blocked, Polymer Solution

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
<u>7K,7L,7M,7N</u>	<u>Toluene Diisocyanate</u>	<u>99.7% AW</u>	<u>Chlorides</u>	<u>0.05% AW</u>
<u>70</u>	<u>Air</u>	<u>41.8% EW</u>	<u>UK</u>	<u>NA</u>
	<u>Nitrogen</u>	<u>42.2% EW</u>		
	<u>Toluene Diisocyanate</u>	<u>0.4% EW</u>		
	<u>Trimethylol Propane</u>	<u>0.3% EW</u>		
	<u>Naphtha 100</u>	<u>14.9% EW</u>		
	<u>Dibasic Esters</u>	<u>0.5% EW</u>		

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

[ ] Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7P	Air	55.4% EW	UK	NA
	Nitrogen	42.1% EW		
	Toluene Diisocyanate	172ppm EW		
	Trimethylol Propane	0.2% EW		
	Naphtha 100	2.1% EW		
	Dibasic Esters	0.1% EW		
7Q	Air	99.994% EW	UK	NA
	Toluene Diisocyanate	0.006% EW		

7.06 continued below

[X] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s).  
If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
☐ Blocked, Polymer Solution

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7R	Nothing	Line is normal - shut by valve		
7S	Toluene Diisocyanate	87ppm EW	UK	NA
	Air	8.17% EW		
	Nitrogen	91.82% EW		
7T	Toluene Diisocyanate	115ppm EW	UK	NA
	Air	99.99% EW		

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s).  
If a process block flow diagram is provided for more than one process type, photocopy  
this question and complete it separately for each process type. (Refer to the  
CBI instructions for further explanation and an example.)

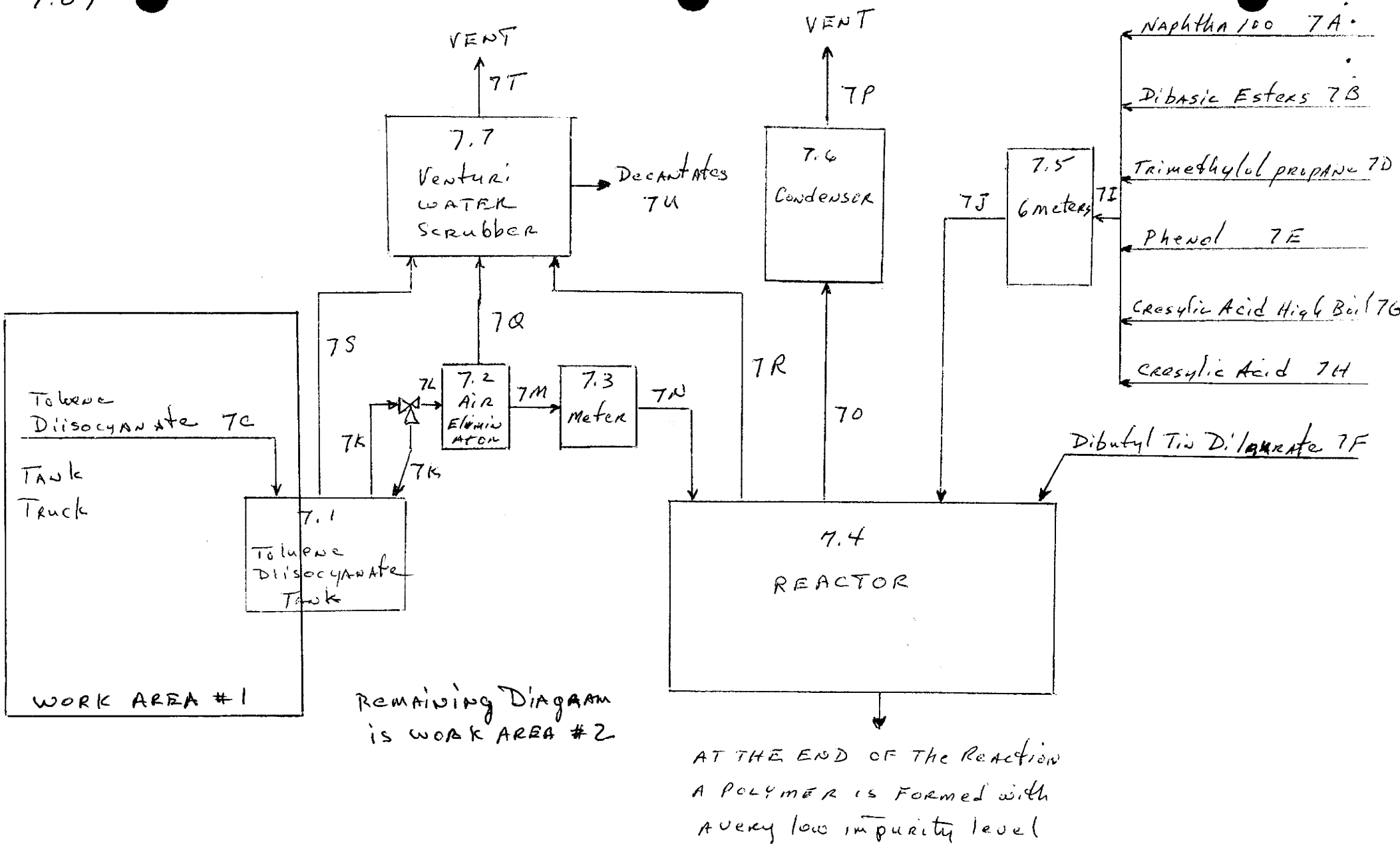
☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
☐ Blocked, Polymer Solution

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concen- trations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7U	Naphtha 100	2% EW	UK	NA
	Cresylic Acid	1% EW		
	Cresylic Acid High Boil	0.5% EW		
	Phenol	0.5% EW		
	Water	96% EW		

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

9.04



Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol Blocked, Polymer Solution  
91 A

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
☐ Process type ..... Blocked, Polymer Solution

Work area ..... 1

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
E	1	Skin & Inhalation	OL/GU	C	3

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)	SY = Sludge or slurry
GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)	AL = Aqueous liquid
SO = Solid	OL = Organic liquid
	IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less	D = Greater than 2 hours, but not exceeding 4 hours
B = Greater than 15 minutes, but not exceeding 1 hour	E = Greater than 4 hours, but not exceeding 8 hours
C = Greater than one hour, but not exceeding 2 hours	F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol Blocked, Polymer Solution

Work area ..... 2

Labor Category	8-hour TWA Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)	15-Minute Peak Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)
<u>A</u>	<u>&lt;20 ppb</u>	<u>&lt;20 ppb</u>
<u>B</u>	<u>&lt;20 ppb</u>	<u>&lt;20 ppb</u>
<u>C</u>	<u>&lt;20 ppb</u>	<u>&lt;20 ppb</u>
<u>D</u>	<u>&lt;20 ppb</u>	<u>&lt;20 ppb</u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
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<u> </u>	<u> </u>	<u> </u>

☒ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Work area ..... 2

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	N			
General dilution	N			
Other (specify)	N			
Vessel emission controls	Y	1980	N	NA
Mechanical loading or packaging equipment	N			
Other (specify)				
Total enclosed pipelines used for toluene diisocyanate	Y	1980	N	NA

[ ] Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol

☐ Process type .....Blocked, Polymer Solution

Work area ..... 2

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
NA	NA

☐ Mark (X) this box if you attach a continuation sheet.

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

[ ] Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Work area ..... 2

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	N

100A

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Process type .....

Work area ..... 2

1. Reactor in isolated room with door closed

2. Process run by computer 100 feet away

3. Changing rooms with washer and dryer provided

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... Toluene Diisocyanate, Trimethylol Propane Adduct, Phenol  
Blocked, Polymer Solution

Work area ..... 2

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	X			
Vacuuming	X			
Water flushing of floors	X			
Other (specify)				
Enclosed system only vapor losses	X			

☐ Mark (X) this box if you attach a continuation sheet.

Fold at line over top of envelope to the right  
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